

REMARKS

The Office action dated October 16, 2003 and the cited references have been carefully considered.

Status of the Claims

Claims 1-29 are pending.

Claim 2 is objected to because the units of measurement of thermal strain are missing. Claims 2, 4, and 12 are rejected under 35 U.S.C. § 112, first paragraph. Claims 2, 4, and 12 are rejected under 35 U.S.C. § 112, second paragraph.

Claims 1, 3, 5, 8-11, 13-17, 23, 25-27 are rejected under 35 U.S.C. § 102(b) as being anticipated by the Budhani et al. article (hereinafter "Budhani").

Claims 4 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Budhani in view of Good et al. (U.S. Patent 5,912,759; hereinafter "Good"). Claims 6, 7, 18, and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Budhani in view of EP 009087713A1 (hereinafter "EP"). Claim 19 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Budhani in view of prior art disclosed on page 8 of the specification. Claims 20-22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Budhani in view of prior art disclosed on page 8 of the specification and further in view of Smialek et al. (U.S. Patent 5,275,670; hereinafter "Smialek"). Claims 28 and 29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Budhani in view of Chapman (U.S. Patent 6,568,848; hereinafter "Chapman").

The Applicants respectfully traverse all of these rejections for the reasons set forth below.

Objection to the Drawings

The drawings are objected to because the feature "electrically conducting material extends beyond the edge" as stated in claims 4 and 12 are not shown in the drawings. The Applicants are submitting herewith Figure 9 showing electrically conducting film 30

extending beyond edge 12 of base dielectric film 10. This feature is disclosed in Paragraph 0023 of the original specification. No new matter has been added.

Claim Objection

Claim 2 is objected to because the units of measurement of thermal strain are missing. The Applicants respectfully traverse this objection because the thermal strain is dimensionless; i.e., it has no units. Paragraph 0021 discloses thermal strain and its calculation. Specifically, Paragraph 0021 teaches that thermal strain is obtained by multiplying the difference in the thermal expansion coefficients for the dielectric and the substrate with the total change in temperature in the heating-cooling cycle. The units of thermal expansion coefficient are inverse degrees (e.g., $^{\circ}\text{C}^{-1}$), and those of temperature are $^{\circ}\text{C}$. Therefore, thermal strain is dimensionless.

Claim Rejection Under 35 U.S.C. § 112, First Paragraph

Claims 2, 4, and 12 are rejected under 35 U.S.C. § 112, first paragraph. Specifically, claim 2 is rejected because the thermal strain and units of its measurements allegedly have not been described in the specification. The Applicants respectfully traverse this rejection because Paragraph 0021 of the specification as filed described thermal strain and how to obtain its value. In addition, as pointed out above, thermal strain is dimensionless. Claims 4 and 12 are rejected because the Examiner alleges that “the ‘electrically conducting material extends beyond the edge’ “ has not been described in the specification. The Applicants respectfully traverse this rejection because Paragraphs 0023 and 0030 teach an embodiment wherein “a thermocouple film deposited on the base dielectric film [] extend[s] beyond an edge of the base dielectric film to form a thermocouple junction with the substrate when the substrate comprises an electrically conducting material.” Since the thermocouple film forms a thermocouple junction with the substrate that comprises an electrically conducting material, the thermocouple film is inherently electrically conducting. Therefore, Paragraph fully describes the subject matter of claims 4 and 12.

Claim Rejection Under 35 U.S.C. § 112, Second Paragraph

Claims 2, 4, and 12 are rejected under 35 U.S.C. § 112, second paragraph. Specifically, claim 2 is rejected because "it is not clear what particular value of the thermal strain is being claimed."

Claim 2 has been amended to recite that the thermal strain between the first electrically non-conducting film and the substrate is maintained at less than about 0.006. This limitation is disclosed in Paragraph 0021 of the specification as filed.

Claims 4 and 12 are rejected because the Examiner alleges that the claim language is confusing due to the reason stated in paragraph 5 of the Office action. Paragraph 5 of the Office action states that "the 'electrically conducting material extends beyond the edge' as stated in claims 4 and 12 [] has not been described in the specification." The Applicants respectfully traverse this rejection because Paragraphs 0023 and 0030 of the specification teach this limitation. Figure 9 submitted herewith, showing the teaching of Paragraphs 0023 and 0030, also should illustrate this language very clearly. The Applicants are at a loss as to why this language is confusing to the Examiner.

Claim Rejection Under 35 U.S.C. § 102(b)

Claims 1, 3, 5, 8-11, 13-17, 23, and 25-27 are rejected under 35 U.S.C. § 102(b) as being anticipated by Budhani. The Applicants respectfully traverse this rejection because Budhani does not teach each and every element of each of claims 1, 3, 5, 8-11, 13-17, 23, and 25-27.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a *single* prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). "The identical invention must be shown in as complete detail as is contained in the . . . claim." *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

Budhani discloses only a film thermocouple for measuring temperature.

In contradistinction, claims 1 and 3 recite a system that comprises a film material, a change in the property of which provides a measurement of strain or combination of strain and temperature.

Since Budhani does not disclose measurement of strain, Budhani does not disclose each and every element of each of claims 1 and 3, and consequently, Budhani does not anticipate these claims.

Claims 5, 8-11, 13-17, 23, and 25-27 recite maintenance of a thermal strain between the dielectric base film and the substrate at less than about 0.006. Budhani does not disclose this limitation.

Since Budhani does not disclose each and every element of each of claims 5, 8-11, 13-17, 23, and 25-27, Budhani does not anticipate these claims.

Claim Rejection Under 35 U.S.C. § 103(a)

Claims 4 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Budhani in view of Good. The Applicants respectfully traverse this rejection because a combination of Budhani and Good does not teach or suggest all of the limitations of each of claims 4 and 12.

"[T]he legal conclusion of obviousness [under 35 U.S.C. § 103(a)] requires that there be some suggestion, motivation, or teaching in the prior art whereby the person of ordinary skill would have selected the components that the inventor selected and used them to make the new device." *C.R. Bard, Inc. v. M3 Systems, Inc.*, 48 U.S.P.Q.2d 1225, 1231 (Fed. Cir. 1998). Thus, in order for the prior art to render the claimed invention obvious, all of the elements thereof must be taught or suggested in the prior art. "What must be found obvious to defeat the patentability of the claimed invention is the claimed combination." *The Gillette Co. v. S.C. Johnson & Son, Inc.*, 16 U.S.P.Q.2d 1923, 1927 (Fed. Cir. 1990) (emphasis added).

As pointed out above, Budhani does not disclose a film for measuring a strain or a combination of strain and temperature.

Good discloses an electrochemical cell wherein the two conducting electrode layers do not and cannot meet. (See, Figure 2, elements 26 and 30, representing the two electrodes, and column 4, lines 50-52.) Otherwise, there will be an electrical short circuit.

In contradistinction, claim 4 recites a device that measures a strain or a combination of strain and temperature, and that one electrically conducting film is joined with another electrically conducting material (the metal substrate) beyond an edge of an intervening dielectric material.

In addition, neither Budhani nor Good teaches or suggests a thermal strain between the dielectric material and the substrate to be less than about 0.006, as is recited in claim 12.

Since a combination of Budhani and Good does not teach or suggest all of the limitations of each of claims 4 and 12, these claims are patentable over Budhani in view of Good.

Claims 6, 7, 18, and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Budhani in view of EP.

Budhani does not teach or suggest a thermal strain between the dielectric film and the substrate to be less than about 0.006, as is recited in claims 6, 7, 18, and 24. Therefore, adding EP to show an electrically non-conducting protective layer or an electrically non-conducting layer separating the two thermocouple legs still does not teach or suggest all of the limitations of these claims.

Since a combination of Budhani and EP does not teach or suggest all of the limitations of each of claims 6, 7, 18, and 24, these claims are patentable over Budhani in view of EP.

Claim 19 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Budhani in view of prior art disclosed on page 8 of the specification. The Applicants respectfully traverse this rejection because a combination of Budhani and the cited disclosure does not teach or suggest all of the limitations of claim 19.

Budhani does not teach or suggest a thermal strain between the dielectric film and the substrate to be less than about 0.006, as is recited in claim 19. Therefore, a combination of Budhani and the disclosure of OhmCraft and Sciperio direct writing apparatuses still does not teach or suggest all of the limitations of claim 19.

Since a combination of Budhani and the disclosure of OhmCraft and Sciperio direct writing apparatuses does not teach or suggest all of the limitations of claim 19, this claim is patentable over Budhani in view of the disclosure of direct writing apparatuses.

Claims 20-22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Budhani in view of prior art disclosed on page 8 of the specification and further in view of Smialek. The Applicants respectfully traverse this rejection because a combination of Budhani, the cited disclosure, and Smialek does not teach or suggest all of the limitations of each of claims 20-22.

Budhani does not teach or suggest a thermal strain between the dielectric film and the substrate to be less than about 0.006, as is recited in claims 20-22. Therefore, adding the cited disclosure to show the direct writing apparatuses, and Smialek to show the annealing of deposited materials still does not teach or suggest all of the limitations of each of claims 20-22.

Since a combination of Budhani, the cited disclosure, and Smialek does not teach or suggest all of the limitations of each of claims 20-22, these claims are patentable over Budhani in view of the cited disclosure, and Smialek.

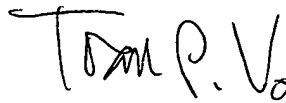
Claims 28 and 29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Budhani in view of Chapman. The Applicants respectfully traverse this rejection because a combination of Budhani and Chapman does not teach or suggest all of the limitations of each of claims 28 and 29.

Budhani does not teach or suggest a thermal strain between the dielectric film and the substrate to be less than about 0.006, as is recited in claims 28 and 29. Therefore, adding Chapman to show radio frequency transmission of temperature readings still does not teach or suggest all of the limitations of each of claims 28 and 29.

Since a combination of Budhani and Chapman does not teach or suggest all of the limitations of each of claims 28 and 29, these claims are patentable over Budhani in view of Chapman.

In view of the above, it is submitted that the claims are patentable and in condition for allowance. Reconsideration of the rejection is requested. Allowance of claims at an early date is solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Toan P. Vo", is written above a horizontal line.

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